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Rael Sacks

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EXAMINER

GELLNER, JEFFREY L

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/615,967
Filing Date: July 09, 2003
Appellant(s): SACKS, RAEL

Richard A. Ryan
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 23 October 2006 appealing from the Office action
mailed 2 November 2005.

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

3,933,311	Lemelson	1-1976
5,715,628	Beladakis	2-1998
DE 3039971 A1	Gruber	5-1982
4,820,469	Walsh et al.	4-1989
6,389,742 B1	Wuster	5-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC §103

The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 8, 9, 12, and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lemelson (US 3,933,311) in view of Beladakis (US 5,715,628).

As to Claim 1, Lemelson discloses a landscape edging system (Figs. 1-5) comprising an edging strip (11 of Figs. 1 and 5) having top and bottom surfaces (surfaces of 15 and 17 of Fig. 1) and first and second ends, edging strip having a core (12, 15, and 17 of Fig. 1), the core layer having two longitudinal channels (15B and 17B of Fig. 1) disposed therein, each of the channels having a channel wall (shown in Fig. 1); and a connector (20 of Figs. 1 and 4) having a channel shaped sleeve portion (25, 26, 22, 27, 28 of Fig. 1; sleeve portion is channel shaped in that fits into channels 15B and 17B) with an internal body member (22 of Figs. 1 and 4) with open first and second ends (in that ends around 28B and 26A of Fig. 1 are open) configured to receive the ends of the edging strip (in that they join with edging strip), the sleeve having several extending portions ((26A, 26B, 28A, and 8B of Figs. 1 and 2) thereon, each of the extending portions configured to be received in one of the channels of the edging strip. Not disclosed is a relatively

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thin shell layer disposed around the core layer. Beladakis, however, discloses a landscape edging with a core (15 of Fig. 3) with a relatively thin shell layer (9 of Fig. 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the edging system of Lemelson by adding a plastic coating as disclosed by Beladakis so as to provide UV protection (at col. 2 lines 52-64 of Beladakis) so as to have the edging last longer.

As to Claim 6, Lemelson as modified by Beladakis further disclose the core layer with two longitudinal channels (15 and 17 of Fig. 1 of Lemelson) and the connector with to extending portions (see Figs. 1 and 4 of Lemelson).

As to Claim 8, the limitations of Claim 1 are disclosed as described above. Not disclosed are the connector's extending portions having protruding barbs. Examiner takes official notice that it is old and notoriously well known in the connector art to use protruding barbs to make a connection more tight. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by making the connector's extending portions with protruding barbs so as to make the connection more tight.

As to Claim 9, Lemelson as modified by Beladakis further disclose the channels with openings at the first and second ends of the strip (Fig. 1 of Lemelson).

As to Claim 12, Lemelson discloses a landscape edging system (Figs. 1-5) comprising an edging strip (11 of Figs. 1 and 5) having top and bottom surfaces (surfaces of 15 and 17 of Fig. 1) and first and second ends, edging strip having a core (12, 15, and 17 of Fig. 1), the core coextruded (col. 2 lines 1-9); the core layer having two longitudinal channels (15B and 17B of

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Fig. 1) disposed therein, each of the channels having a channel wall (shown in Fig. 1); and a connector (20 of Figs. 1 and 4) having a channel-shaped sleeve portion (25, 26, 22, 27, 28 of Fig. 1; sleeve portion is channel shaped in that fits into channels 15B and 17B), with open first and second ends (in that ends around 28B and 26A of Fig. 1 are open) configured to receive the ends of the edging strip (in that they join with edging strip), with an internal body member (22 of Figs. 1 and 4) having several extending portions (26A, 26B, 28A, and 8B of Figs. 1 and 2) thereon, each of the extending portions configured to be received in one of the channels. Not disclosed is a relatively thin shell layer disposed around the core layer and both layers coextruded. Beladakis, however, discloses a landscape edging with a core (15 of Fig. 3) with a relatively thin shell layer (9 of Fig. 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the edging system of Lemelson by adding a plastic coating as disclosed by Beladakis so as to provide UV protection (at col. 2 lines 52-64 of Beladakis) so as to have the edging last longer and by making by coextrusion so as to make at a low cost (a furtherance of the concept of Lemelson at col. 1 line 29).

As to Claim 17, the limitations of Claim 12 are disclosed as described above. Not disclosed are the connector's extending portions having protruding barbs. Examiner takes official notice that it is old and notoriously well known in the connector art to use protruding barbs to make a connection more tight. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by making the connector's extending portions with protruding barbs so as to make the connection more tight.

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Claims 2 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lemelson (US 3,933,311) in view of Beladakis (US 5,715,628) in view of Gruber (DE 3039971 A1).

As to claim 2, the limitations of Claim 1 are disclosed as described above. Not disclosed is the shell layer substantially encapsulating the core layer. Gruber, however, discloses an edging with a shell layer encapsulating a core layer (page 3 lines 16-17 of translation in English of Gruber). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by substantially encapsulating the core with a shell as disclosed by Gruber so as to afford protection for the complete edging system.

As to Claim 21, Lemelson discloses a landscape edging system (Figs. 1-5) comprising an edging strip (11 of Figs. 1 and 5) having top and bottom surfaces (surfaces of 15 and 17 of Fig. 1) and first and second ends, edging strip having a core (12, 15, and 17 of Fig. 1), the core layer having two longitudinal channels (15B and 17B of Fig. 1) disposed therein, each of the channels having a channel wall (shown in Fig. 1); and a connector (20 of Figs. 1 and 4) having a channel shaped sleeve portion (25, 26, 22, 27, 28 of Fig. 1; sleeve portion is channel shaped in that fits into channels 15B and 17B) with an internal body member (22 of Figs. 1 and 4) with open first and second ends (in that ends around 28B and 26A of Fig. 1 are open) configured to receive the ends of the edging strip (in that they join with edging strip), the sleeve having several extending portions ((26A, 26B, 28A, and 8B of Figs. 1 and 2) thereon, each of the extending portions configured to be received in one of the channels of the edging strip. Not disclosed is a relatively thin shell layer substantially encapsulating the core layer. Beladakis, however, discloses a landscape edging with a core (15 of Fig. 3) with a relatively thin shell layer (9 of Fig. 3); Gruber

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discloses the shell encapsulating the core. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the edging system of Lemelson by adding a plastic coating as disclosed by Beladakis so as to provide UV protection (at col. 2 lines 52-64 of Beladakis) so as to have the edging last longer and by making by coextrusion so as to make at a low cost (a furtherance of the concept of Lemelson at col. 1 line 29).

Claims 3-5 and 13-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lemelson (US 3,933,311) in view of Beladakis (US 5,715,628) in further view of Walsh et al. (US 4,820,469).

As to Claim 3, the limitations of Claim 1 are disclosed as described above. Not disclosed is the core layer made of regrind plastic. Walsh et al., however, discloses the use of regrind plastic in a core (col. 11 lines 52-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by using regrind plastic as the core as disclosed by Walsh et al. so as to find a use for reprocessed material (col. 3 lines 39-45 of Walsh et al.).

As to Claim 4, the limitations of Claim 1 are disclosed as described above. Not disclosed is the shell layer made of high quality plastic. Walsh et al., however, discloses the use of high quality plastic in a shell (col. 11 lines 52-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by using high quality plastic as the shell as disclosed by Walsh et al. so as to find a use for reprocessed material (col. 3 lines 39-45 of Walsh et al.) that still retains a high performance outer layer.

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As to Claim 5, the limitations of Claim 1 are disclosed as described above. Lemelson further discloses coextrusion in an edging (col. 2 lines 1-8). Not disclosed is the core layer being regrind plastic and the shell layer being high quality plastic. Walsh et al., however, discloses the use of regrind plastic in a core and high quality plastic in a shell (col. 11 lines 52-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by making by coextrusion as disclosed by Lemelson so as to make at a low cost (see Lemelson at col. 1 line 29) and by using regrind plastic as the core and high quality plastic in a shell as disclosed by Walsh et al. so as to find a use for reprocessed material (col. 3 lines 39-45 of Walsh et al.) that still retains a high performance outer layer.

As to Claim 13, the limitations of Claim 12 are disclosed as described above. Not disclosed is the core layer made of regrind plastic. Walsh et al., however, discloses the use of regrind plastic in a core (col. 11 lines 52-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by using regrind plastic as the core as disclosed by Walsh et al. so as to find a use for reprocessed material (col. 3 lines 39-45 of Walsh et al.).

As to Claim 14, the limitations of Claim 12 are disclosed as described above. Not disclosed is the shell layer made of high quality plastic. Walsh et al., however, discloses the use of high quality plastic in a shell (col. 11 lines 52-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by using high quality plastic as the shell as disclosed by

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Walsh et al. so as to find a use for reprocessed material (col. 3 lines 39-45 of Walsh et al.) that still retains a high performance outer layer.

As to Claim 15, the limitations of Claim 12 are disclosed as described above. Not disclosed is the core layer being regrind plastic and the shell layer being high quality plastic. Walsh et al., however, discloses the use of regrind plastic in a core and high quality plastic in a shell (col. 11 lines 52-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by making by using regrind plastic as the core and high quality plastic in a shell as disclosed by Walsh et al. so as to find a use for reprocessed material (col. 3 lines 39-45 of Walsh et al.) that still retains a high performance outer layer.

Claims 7 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lemelson (US 3,933,311) in view of Beladakis (US 5,715,628) in further view of Wuster (US 6,389,742 B1).

As to Claim 7, the limitations of Claim 1 are disclosed as described above. Not disclosed is the one or more extending portions being tapered. Wuster, however, discloses a connector with extending portions that are tapered (7 of Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by having the connector's extending portions being tapered as disclosed by Wuster so as to facilitate the ease of connecting the edging parts.

As to Claim 16, the limitations of Claim 12 are disclosed as described above. Not disclosed is the one or more extending portions being tapered. Wuster, however, discloses a connector with extending portions that are tapered (7 of Fig. 1). It would have been obvious to

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one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by having the connector's extending portions being tapered as disclosed by Wuster so as to facilitate the ease of connecting the edging parts.

Claims 10, 11, and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lemelson (US 3,933,311) in view of Beladakis (US 5,715,628) in further view of Danna et al. (US 6,108,969).

As to Claim 10, the limitations of Claim 1 are disclosed as described above. Not disclosed is a stake member configured to engage the strip to the ground. Danna et al., however, discloses a stake member (25 of Fig. 6) configured to engage the strip to the ground. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by adding a stake member as disclosed by Danna et al. so as to make the edging more secure in the ground.

As to Claim 11, Lemelson as modified by Beladakis as further modified by Danna et al. further disclose the stake member penetrating the side of the edging strip (Fig. 6 of Danna et al.).

As to Claim 18, the limitations of Claim 12 are disclosed as described above. Not disclosed is a stake member configured to engage the strip to the ground. Danna et al., however, discloses a stake member (25 of Fig. 6) configured to engage the strip to the ground. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis by adding a stake member as disclosed by Danna et al. so as to make the edging more secure in the ground.

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Claim 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lemelson (US 3,933,311) in view of Beladakis (US 5,715,628) in further view of Gruber (DE 3039971 A1) and Walsh et al. (US 4,820,469).

As to Claim 22, the limitations of Claim 21 are disclosed as described above. Not disclosed is the core layer made of regrind plastic. Walsh et al., however, discloses the use of regrind plastic in a core (col. 11 lines 52-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the edging system of Lemelson as modified by Beladakis and Gruber by using regrind plastic as the core as disclosed by Walsh et al. so as to find a use for reprocessed material (col. 3 lines 39-45 of Walsh et al.).

(10) Response to Argument

Issue 1: Whether claims 1,6, 8, 9, 12, and 17 are patentable under 35 USC 103(a) over Lemelson in view of Beladakis.

Examiner disagrees with Applicant. The rejection is proper because all limitations are shown in the prior art cited, there is motivation to add a coating as disclosed by Beladakis, and there is reasonable expectation of success since Beladakis discloses an edging with a coating.

Issue 2: Whether claims 2 and 21 are patentable under 35 USC 103(a) over Lemelson in view of Beladakis in further view of Gruber.

Examiner disagrees with Applicant. The rejection is proper because all limitations are shown in the prior art cited, there is motivation to add a coating as disclosed by Beladakis, and

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there is reasonable expectation of success since Beladakis and Gruber discloses edgings with a coatings. Lemelson discloses co-extrusion at col. 2 line 9.

Issue 3: Whether claims 3-5 and 13-15 are patentable under 35 USC 103(a) over Lemelson in view of Beladakis in further view of Walsh et al.

Examiner disagrees with Applicant. The rejection is proper because all limitations are shown in the prior art cited, there is motivation to add a coating as disclosed by Beladakis, and there is reasonable expectation of success since Walsh et al. discloses an object with a regrind core.

Issue 4: Whether claims 7 and 16 are patentable under 35 USC 103(a) over Lemelson in view of Beladakis in further view of Gruber in further view of Wuster.

Examiner disagrees with Applicant. The rejection is proper because all limitations are shown in the prior art cited, there is motivation to add a coating as disclosed by Beladakis, and there is reasonable expectation of success since Beladakis discloses an edging with a coating.

Issue 5: Whether claims 10, 11, and 18 are patentable under 35 USC 103(a) over Lemelson in view of Beladakis in further view of Danna et al.

Examiner disagrees with Applicant. The rejection is proper because all limitations are shown in the prior art cited, there is motivation to add a coating as disclosed by Beladakis, and there is reasonable expectation of success since Danna et al. discloses an edging with a stake.

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Issue 6: Whether claim 22 is patentable under 35 USC 103(a) over Lemelson in view of Beladakis in further view of Gruber and Walsh et al.

Examiner disagrees with Applicant. The rejection is proper because all limitations are shown in the prior art cited, there is motivation to add a coating as disclosed by Beladakis, and there is reasonable expectation of success since Beladakis and Gruber discloses edgings with a coatings. Lemelson discloses co-extrusion at col. 2 line 9.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.


Respectfully submitted,



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AU 3643

Conferees:

KR Kurt Rowan 

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PTO 04-4774

German Patent No.: 30 39 971 A1

PLATE FOR INSERTION INTO THE GROUND

Bruno Gruber

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UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. AUGUST 2004
TRANSLATED BY THE RALPH MCELROY TRANSLATION COMPANY

FEDERAL REPUBLIC OF GERMANY
GERMAN PATENT OFFICE
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PLATE FOR INSERTION INTO THE GROUND

[Bodenplatte]

Inventor: Bruno Gruber
Applicant: Bruno Gruber

Claims

1. Plate for insertion into the ground, characterized by the fact that the essentially planar plate (1) has a lateral edge (2) that is provided at least in part with acutely angled hooks (3) or an acutely angled flange (4) capable of being brought into a state of engagement with the leading edge of a spade.

2. Plate for insertion into the ground in accordance with Claim 1, characterized by the fact that the plate (1) possesses a fold (5) or a series of perforations in the region of the root of the hooks or the edge of the flange.

3. Plate for insertion into the ground in accordance with Claim 1 or 2, characterized by the fact that it is a stiff or flexible plastic material.

4. Plate for insertion into the ground in accordance with Claim 1 or 2, characterized by the fact that it is a metal material.

5. Plate for insertion into the ground in accordance with Claim 4, characterized by the fact that the metallic material is coated with plastic.

* [Numbers in the right margin indicate the pagination of the original text.]

6. Plate for insertion into the ground in accordance with Claims 3 through 5, characterized by the fact that it is a foil material.

7. Plate for insertion into the ground in accordance with Claims 3 through 6, characterized by the fact that it has stiffening ribs.

8. Plate for insertion into the ground in accordance with one of the preceding claims, characterized by the fact that the edge region (6) of the plate (1) can be bent in a planar or curved manner in such a way that the plate (1) possesses an essentially S-shaped form in its cross section (Figures 6-8), whereby this edge region is located opposite the hook or the flange's lateral edge (2).

9. Plate for insertion into the ground in accordance with Claim 8, characterized by the fact that the edge region (6) is bent at a right angle or at an acute angle.

10. Plate for insertion into the ground in accordance with one of the preceding claims, characterized by the fact that the edge region (6) has securing hooks (10) and/or securing eyelets (11) (Figures 10 and 11).

11. Plate for insertion into the ground in accordance with one of the preceding claims, characterized by the fact that a double plate arrangement with a spade pouch (7) is provided for it (Figure 9).

12. Plate for insertion into the ground in accordance with Claim 11, characterized by the fact that the double plate arrangement is constructed from one single piece of material.

13. Plate for insertion into the ground in accordance with Claim 11 or 12, characterized by the fact that the double plate arrangement is constructed symmetrically in terms of its cross section.

14. Plate for insertion into the ground in accordance with Claims 8 through 13, characterized by the fact that the edge region (6) of the plate (1) has openings.

The invention pertains to a plate for insertion into the ground, especially for use in horticulture in order to set up the demarcations of plant cultivation beds, etc.

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A conventional arrangement is a plate that, in the simplest case, is buried to the desired depth and represents an underground or above-ground demarcation, depending on the depth to which it is buried in the ground. Although thin flexible plates can be used in this way, a significant disadvantage is the previously time-consuming process of digging up the ground and destroying the vegetation in the excavation region of the earth.

In the case of an additionally known embodiment, the plate is constructed in a comparatively thick manner in order to achieve high mechanical stability. The plate is pushed, or hammered, into the soil without deforming the plate. A disadvantageous feature is the difficult introduction of the plate [into the soil] as a result of its thick construction and the danger of its

breaking up. These known plates of high mechanical stability necessitate a lot of material and are therefore not inexpensive to manufacture. In addition to this, they are comparatively heavy because of their thick construction and they are correspondingly unwieldy during their transportation to the site and introduction into the soil.

The objective of the present invention is the creation of a plate for insertion into the ground that is simple in terms of construction, and that has a wide variety of usage possibilities in the soil, and that is not only capable of being manufactured simply but that is also light and can be introduced into the soil using simple devices. /5

The problem that forms the underlying basis of the invention is solved by way of the fact that the plate, which is essentially planar, has a lateral edge with, at least in part, acutely angled hooks or an acutely angled flange capable of being brought into a state of engagement with the leading edge of a spade.

In an advantageous further development of the invention, the plate can possess a fold or a series of perforations in the region of the root of the hooks or of the bent edge.

In particular, a stiff or flexible plastic material is provided for it.

In an alternative embodiment, however, metal can also be used, especially one that has been coated with plastic.

Foil material can also be provided for it.

Stiffening ribs can be provided in order to achieve greater rigidity, whereby these extend, in particular, in the direction of insertion of the plate.

The plate's edge region, which is located opposite the hook or flange's lateral edge, can expediently be bent over in a planar or curved manner so that the plate for insertion into the ground possesses an essentially S-shaped form in terms of its cross section, and it can have openings for vegetation to grow through.

In particular, the edge region is bent over at a right angle or at an acute angle. /6

In a further expedient embodiment of the invention, the edge region can additionally have securing hooks and/or securing eyelets so that, for example, the securing guy ropes of tents or plastic covering awnings can be anchored down advantageously once the plate has been introduced into the soil. The guy ropes can be secured before introducing the plate into the soil in order to be able to subsequently introduce the plate, which can also be constructed in a narrow strip, completely into the soil if required.

In the case of an especially expedient embodiment, the plate for insertion into the ground is constructed in a double plate arrangement with a spade pouch.

The double plate arrangement can be formed from one single piece of material, and it can be symmetrical in terms of its cross section.

A plate, which can be manufactured with ease and which permits the attachment of a spade at its lower end, is accordingly created as a result of the invention. Before introducing it into the soil, the plate is applied to a spade, whereby the leading edge of the spade engages with the acutely angled flange or hooks of the lateral edge of the plate. The spade, together with the applied plate, is then pushed into the soil by means of foot pressure, whereby the plate is inserted into the soil and it is exposed essentially only to tensile forces during this insertion process. Since the plate is stressed only by tensile forces, the plate can be relatively thin, lightweight, and optionally flexible, without making the insertion process difficult or breaking up the plate during insertion. The plate is pushed in to the desired depth in accordance with the purpose for which usage is intended. For the majority of standard applications, the plates have a somewhat shorter height relative to the spade, which functions as an introducing tool, so that, for utilizing the spade, the weight of the foot acts on the spade in the case of a parallel arrangement of plates. The withdrawal of the plate is made difficult as a result of the bent portion anchored in the earth, so that adequate retention in the soil is ensured. Use can be made not only of a standard spade as an introducing tool, but also of a special spade that has been adapted to the shape of the plates, especially in the region of the flange or hook construction at the bottom. The flange can be semi-round, acutely angled, or even rectangular, and it does not need to extend across the entire breadth of the plates. The form of the plates can be rectangular, square, strip-like and/or rounded off or flattened off at the top. The upper lateral edge can also have ornamental shapes, and the height of the plate can exceed the height of the blade of the spade if the plate is constructed in a flexible manner. In this case, the plate is pushed out laterally when it is being pushed into the soil. Since the plate is capable of being constructed in a comparatively thin manner because of the fact that it is subject only to tensile stressing, it can be introduced into substrates of even greater consistency, e.g. earth, sand, gravel, peat, liquid concrete, mud, etc. If, in addition to the flange or hook construction at the bottom, the plate has an angular rounded off or flat flange at the top so that an essentially S-shape is formed, then the plate can be inserted into the earth sufficiently far that the upper edge region is in a state of pre-tension and, as a result, additional retention arises for the plate. Naturally, insertion into the soil is possible not only in the vertical direction but oblique insertion or overlapping application is also possible. The latter is favored by the comparatively thin construction of the plate. The flange or hook construction in accordance with the invention can be produced beforehand by the manufacturer. However, it is especially advantageous to premanufacture the plate in a flat planar manner with a fold or perforation line at the location of the flange, and to bring the plate to the usage site in this form. The user himself then bends over the fold or perforation location just before use.

As can be seen, various types of usage are conceivable, e.g. in a restricting demarcation for underground root propagation, or as a mole- or vole-stopping device. In the case of a flange at

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the top, the plate can serve as a device for repulsing surface water or as a plate for a garden path when the upper flange is constructed with a large surface area. The invention preferably finds use for enclosing tombs or plant cultivation beds. If the plate is introduced only partially into the soil, it can serve as a device for producing a seal between wire fencing and the surface of the earth. In the case of a strip-like plate with an upper bored-out hole, the plate can find use as a tent peg. In other cases of its application, the invention can be considered for vegetation-free edge strips (plates, or bent over in a rectangular manner) and, on natural slopes, as a means for repulsing water under the surface of the earth or as a means for stopping erosion.

The invention will be elucidated in more detail below by means of embodiment examples with reference being made to the drawings. The following aspects are shown.

Figure 1 shows a plate in accordance with the invention with a continuous flange at the bottom in a schematic illustration;

Figure 2 shows a plate with a flange that does not extend across the entire breadth of the plate;

Figure 3 shows a plate that is similar to Figure 2, whereby the bottom edge region is curved and adapted to the leading edge of a conventional spade;

Figure 4 shows a plate during the process of inserting it into the earth, whereby the plate is constructed in accordance with Figure 1 and it has been applied to a spade; /9

Figure 5 shows an inserted plate in a schematic illustration;

Figure 6 shows a schematic view, which is similar to Figure 5, of an inserted S-shaped plate;

Figures 7 and 8 show further embodiments of a plate in accordance with the invention;

Figure 9 shows an embodiment of a double plate arrangement with an inner spade pouch;

Figures 10 and 11 show plate embodiments with upper hooks or securing eyelets; and

Figures 12 and 13 show plates with upper ornamental edges.

The embodiment shown in Figure 1, is a plate 1 constructed in a flat planar foil-like manner, and it has a lower rectilinear fold 5. It is brought to the usage site in planar form. Prior to use, the user bends over the lower lateral edge 2 of the plate 1 in order to create an acutely angled flange 4 for engagement with a spade 9. In accordance with Figure 4, the plate is then inserted into the soil until it has reached the desired depth. The spade 9 is then withdrawn and this leaves behind in the soil a plate 1 as shown by way of example in Figure 5. The acutely angled flange 4 prevents the plate from being pulled out with the spade. However, the flange 4, which also serves as a barbed hook, is not so rigid that withdrawal of the plate 1 is ruled out completely in the event of incorrect positioning. This flange is bent back in the case of a more intense withdrawal force.

Thus rapid and facile insertion of a plate into the soil and adequate retention of the plate in the soil is possible on the one hand and, on the other hand, withdrawal and shifting to a new place is also possible despite this adequate retention in the normal position.

The embodiment shown in Figure 2 of a plate 1 is basically the same as that in accordance with Figure 1 but a continuous flange 4 has not been provided for it but, rather, the lower lateral edge 2 has hooks 3 that run at an acute angle to the basic plane of the plate 1 and they can be brought into a state of engagement with a spade.

The embodiment that is illustrated in Figure 3 corresponds to that in accordance with Figure 2, and it has a curved lower edge that has been adapted to the leading edge of a spade.

Embodiment examples are shown in Figures 6 through 8, whereby these examples have an upper edge region 6 in addition to the flange 4 at the bottom, so that the plate is bent in an S-shaped manner. The flange can be flat in this regard, and it can subtend an acute angle (in accordance with Figure 6) or a right angle (in accordance with Figure 7) to the basic plane of the plate 1, but it can also be curved as shown by way of example in Figure 8. The embodiment examples in accordance with Figures 6 and 8 permit pre-tensioning (counter-tensioning) in the event of appropriately deep penetration of the plate into the soil, whereby the edge, which is located at the very front of the upper edge region 6, is in a state of engagement with the soil and, as a result, not only is retention of a plate in the soil possible in a more securely braced manner, but good sealing is possible in the front-edge region. The embodiment example in accordance with Figure 7 is preferably inserted completely into the soil until the upper right angled edge region 6 lies on the soil. A plate of this type serves primarily for the construction of vegetation-free edge strips, of, e.g., a meadow, a plant cultivation bed, or a tomb. However, the plate can also find use as a garden paving plate if the upper edge region 6 is constructed so as to have a large surface area.

The embodiment shown in Figure 9 basically corresponds to the structure of the plate in accordance with Figure 7, but in a double arrangement. The double plate arrangement is manufactured in one single piece of material, and it is constructed symmetrically and it has an inner spade pouch 7 into which the blade of a spade can be introduced. When arranged together in their entirety, such plates serve for the construction of a wider vegetation-free edge strip. The spade pouch 7 can also find use as a run-off channel or drainage canal when in an overlapping arrangement of several plates.

The embodiment shown in Figure 10 has an upper edge region 6 that is constructed in securing hooks 10. The hooks are capable of serving e.g., as an anchoring arrangement for the guy ropes of tents or plastic covering awnings.

The embodiment example in accordance with Figure 11 provides securing eyelets 11 as the securing devices in the upper edge region of the plate, whereby a rope can be threaded

through the eyelets, whereas the embodiment examples in accordance with Figures 12 and 13 possess an ornamental edge.

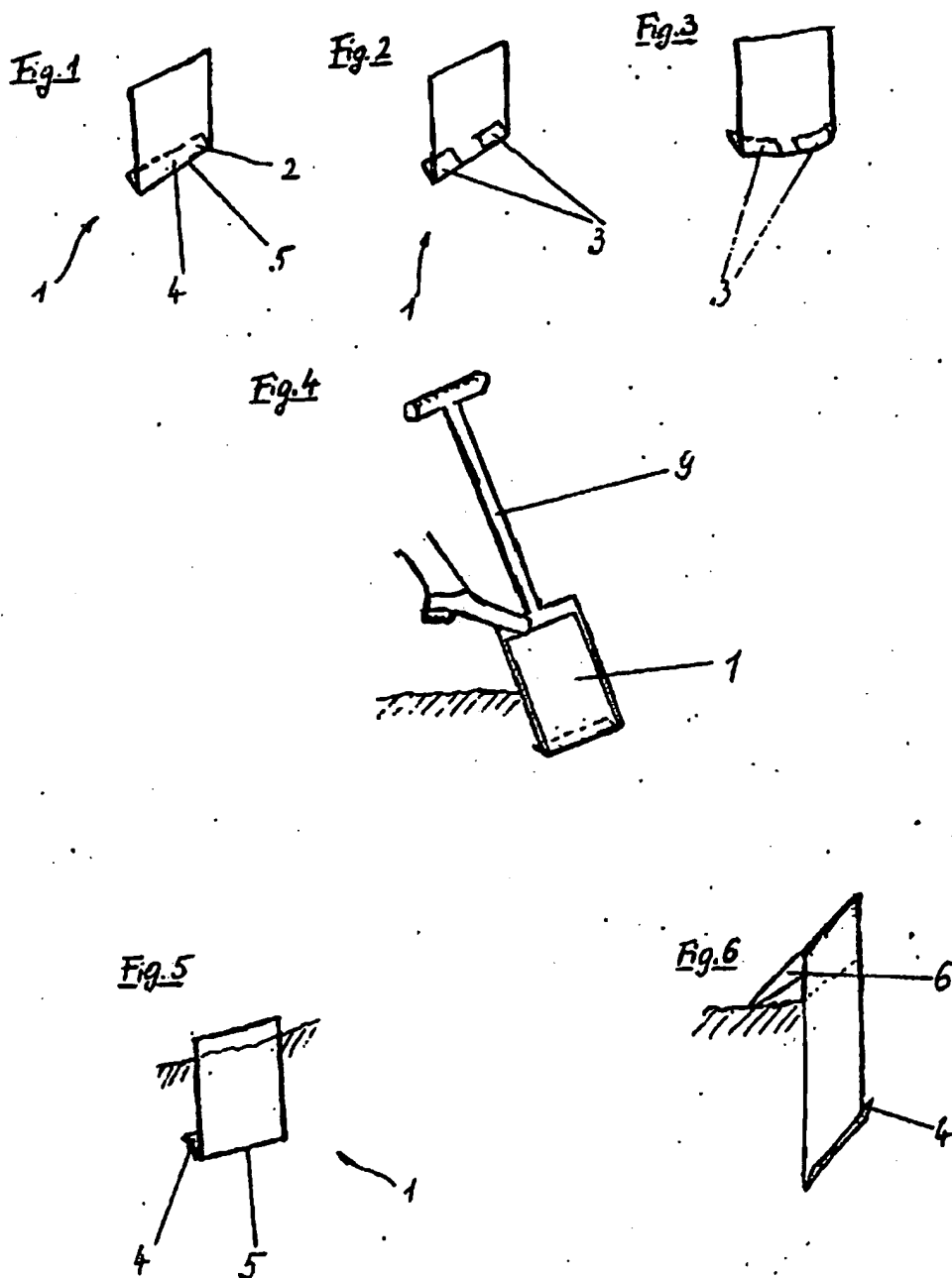
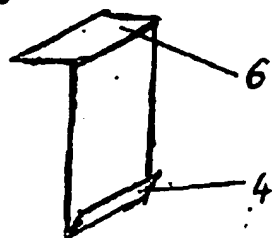
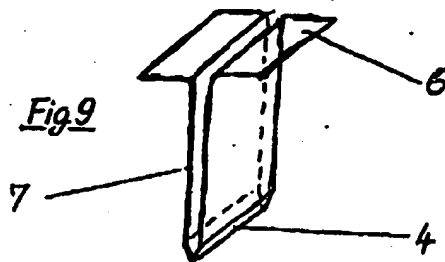
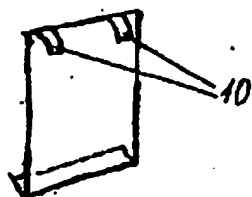
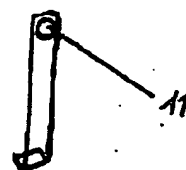
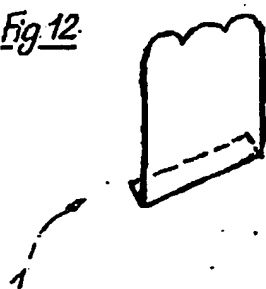
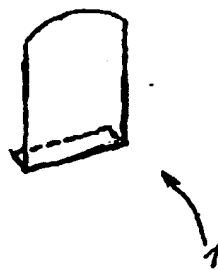


Fig. 7Fig. 8Fig. 9Fig. 10Fig. 11Fig. 12Fig. 13

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Bodenplatte

Patentansprüche

1. Bodenplatte, dadurch gekennzeichnet, daß die im wesentlichen plane Platte (1) einen Seitenrand (2) aufweist, der zumindest teilweise mit spitzen Haken (3) oder einer spitzen Abwinklung (4) versehen ist, die mit der Stechkante eines Spatens in Eingriff bringbar ist bzw. sind.
2. Bodenplatte nach Anspruch 1, dadurch gekennzeichnet, daß die Platte (1) im Bereich der Hakenwurzel bzw. der Abwinklungskante eine Falz (5) oder eine Perforation besitzt.
3. Bodenplatte nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß ein steifes oder ein elastisches Kunststoffmaterial vorgesehen ist.

COPY

4. Bodenplatte nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß ein Metallmaterial vorgesehen ist.
5. Bodenplatte nach Anspruch 4, dadurch gekennzeichnet, daß das Metallmaterial kunststoffüberzogen ist.
6. Bodenplatte nach Anspruch 3 bis 5, dadurch gekennzeichnet, daß ein Folienmaterial vorgesehen ist.
7. Bodenplatte nach Anspruch 3 bis 6, dadurch gekennzeichnet, daß Verstärkungsrippen vorgesehen sind.
8. Bodenplatte nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der dem Haken- oder Abwinklungs-Seitenrand (?) entgegengesetzte Randbereich (6) der Platte (1) plan oder bogenförmig abgewinkelt ist, derart, daß die Platte (1) im Querschnitt im wesentlichen S-Form aufweist (Fig. 6-8).
9. Bodenplatte nach Anspruch 8, dadurch gekennzeichnet, daß der Randbereich (6) rechtwinklig oder spitzwinklig abgewinkelt ist.
10. Bodenplatte nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der Randbereich (6) Befestigungshaken (10) und/oder Befestigungsösen (11) aufweist (Fig. 10 und 11).
11. Bodenplatte nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß eine Doppelplatte mit Spatentasche (7) vorgesehen ist (Fig. 9).
12. Bodenplatte nach Anspruch 11, dadurch gekennzeichnet, daß die Doppelplatte einstückig ausgebildet ist.

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13. Bodenplatte nach Anspruch 11 oder 12, dadurch gekennzeichnet, daß die Doppelplatte im Querschnitt symmetrisch ausgebildet ist.
14. Bodenplatte nach Anspruch 8 bis 13, dadurch gekennzeichnet, daß der Randbereich (6) der Platte (1) mit Durchbrüchen versehen ist.

ORIGINAL INSPECTED

Bodenplatte

Die Erfindung betrifft eine Bodenplatte insbesondere zur Verwendung im Gartenbau, um beispielsweise Begrenzungen von Beeten oder dergl. einzurichten.

Eine herkömmliche Anordnung ist im einfachsten Fall eine Platte, die in gewünschter Tiefe vergraben wird und je nach Eingrabetiefe eine unterirdische oder eine oberirdische Begrenzung darstellt. Obwohl dabei dünne flexible Platten verwendet werden können, ist der wesentliche Nachteil das vorherige zeitraubende Aufgraben des Bodens und die Zerstörung der Vegetation im Bereich des Aushubes.

Bei einer weiteren bekannten Ausführung ist die Platte vergleichsweise dick ausgebildet, um eine hohe mechanische Stabilität zu erzielen. Die Platte wird in das Erdreich eingedrückt bzw. -geklopft, ohne daß diese sich verformt. Nachteilig ist das schwierige Einbringen der Platte aufgrund der großen Dickenausbildung sowie die Gefahr eines Zerbrechens. Die bekannten Platten hoher mechanischer Stabilität benötigen viel Material und sind daher in der Herstellung nicht kostengünstig. Darüber hinaus sind sie aufgrund der Dickenausbildung vergleichsweise schwer und entsprechend unhandlich hinsichtlich des Transports zum Einsatzort und während eines Einbringens in das Erdreich.

Aufgabe der Erfindung ist die Schaffung einer Bodenplatte einfachen Aufbaus mit vielseitiger Verwendbarkeit im Erdreich, die nicht nur einfach herstellbar ist, sondern auch leicht und schnell ins Erdreich mit einfachen Mitteln eingebracht werden kann.

Gelöst wird die der Erfindung zugrundeliegende Aufgabe dadurch, daß die im wesentlichen plane Platte einen Seitenrand aufweist, der zumindest teilweise mit spitzen Haken oder einer spitzen Abwinklung versehen ist, die mit der Stechkante eines Spatens in Eingriff bringbar ist bzw. sind.

Die Platte kann bei einer vorteilhaften Weiterbildung der Erfindung im Bereich der Hakenwurzel bzw. der Abwinklungskante eine Falz oder eine Perforation besitzen.

Insbesondere ist ein steifes oder ein elastisches Kunststoffmaterial vorgesehen.

In alternativer Ausführungsform kann jedoch auch Metall verwendet werden, das insbesondere kunststoffüberzogen ist.

Auch kann Folienmaterial vorgesehen sein.

Zur Erzielung einer größeren Steifigkeit können Versteifungsrippen vorgesehen sein, die sich insbesondere in Einsteckrichtung der Platte erstrecken.

Der dem Haken- oder Abwinklungs-Seitenrand entgegengesetzte Randbereich der Platte kann zweckmäßigerweise plan oder bogenförmig abgewinkelt sein, so daß die Bodenplatte im Querschnitt im wesentlichen S-Form besitzt, und kann insbesondere Durchbrüche für ein Durchwachsen der Vegetation aufweisen.

Der Randbereich ist insbesondere recht- oder spitzwinklig abgewinkelt.

Der Randbereich kann darüber hinaus bei einer weiteren zweckmäßigen Ausgestaltung der Erfindung Befestigungshaken und/oder Befestigungsösen aufweisen, so daß beispielsweise Befestigungsschnüre von Zelten oder Kunststoffabdeckplanen vorteilhaft verankert werden können, wenn die Platte ins Erdreich eingebracht worden ist. Die Schnüre können vor einem Einbringen der Platte ins Erdreich befestigt werden, um anschließend die Platte, die auch als schmaler Streifen ausgebildet sein kann, gegebenenfalls vollständig ins Erdreich einzubringen.

Bei einer besonders zweckmäßigen Ausführungsform ist die Bodenplatte als Doppelplatte mit Spatentasche ausgebildet.

Die Doppelplatte kann einstückig und im Querschnitt symmetrisch sein.

Durch die Erfindung wird demnach eine leicht herstellbare Platte geschaffen, die am unteren Ende das Ansetzen eines Spatens erlaubt. Die Platte wird vor einem Einbringen in das Erdreich an einen Spaten angelegt, wobei die Stechkante des Spatens in die spitze Abwinklung oder mit den spitzen Haken des Seitenrands der Platte eingreift. Anschließend wird der Spaten zusammen mit der angelegten Platte mittels Fußdruck in das Erdreich gedrückt, wobei die Platte in das Erdreich eingezogen wird und während eines Einziehvorgangs im wesentlichen nur Zugkräften ausgesetzt ist. Da die Platte nur zugkraftbeansprucht ist, kann diese vergleichsweise dünn, leichtgewichtig und gegebenenfalls flexibel sein, ohne den Einziehvorgang zu erschweren oder die Platte während eines Einziehens zu

zerbrechen. Entsprechend dem Verwendungszweck wird die Platte bis in die gewünschte Tiefe eingedrückt. Für die meisten Standardanwendungen weisen die Platten gegenüber dem als Einbringwerkzeug fungierenden Spaten eine etwas geringere Höhe auf, so daß bei paralleler Plattenführung zum Spaten das Gewicht des Fußes auf den Spaten wirkt. Mit der im Boden verankerten Biegung wird zusätzlich das Herausziehen der Platte erschwert, so daß ausreichender Halt im Erdreich gewährleistet ist. Als Einbringwerkzeug kann nicht nur ein Standardspaten Verwendung finden, sondern auch ein Spezialspaten, der der Plattenform insbesondere im Bereich der bodenseitigen Abwinklung bzw. Hakenausbildung angepaßt ist. Die Abwinklung kann halbrund, spitz oder auch rechteckig sein und braucht sich nicht über die gesamte Plattenbreite zu erstrecken. Das Format der Platten kann rechteckig, quadratisch, streifenförmig und/oder oben abgerundet oder abgeplattet sein. Der obere Seitenrand kann auch Zierformen aufweisen, und es kann die Höhe der Platte die Höhe der Spatenschaufel überschreiten, sofern die Platte flexibel ausgebildet ist. In diesem Fall wird die Platte bei einem Eindrücken in das Erdreich seitlich weggedrückt. Da die Platte aufgrund der Zugbeanspruchung vergleichsweise dünn^{ausbildbar} ist, kann sie in selbst konsistentere Substrate eingeführt werden, beispielsweise Erde, Sand, Kies, Torf, flüssiger Beton, Lehm oder dergleichen. Weist die Platte neben der bodenseitigen Abwinklung oder Hakenausbildung eine obere Abrundung oder plattige Abwinklung auf, so daß im wesentlichen S-Form gebildet ist, kann die Platte so weit in den Boden eingezogen werden, daß auch der obere Randbereich unter Vorspannung steht und dadurch einer Platte zusätzlichen Halt gibt. Selbstverständlich ist ein Einstecken nicht nur in senkrechter Richtung ins Erdreich, sondern auch eine Schrägsteckung oder eine überlappende Anbringung möglich. Letzteres wird durch die vergleichsweise dünne Ausbildung der Platte begünstigt. Die erfindungsgemäße Abwinklung oder Hakenausbildung kann bereits vom Hersteller gefertigt werden. Besonders vorteilhaft ist es jedoch, die Platte eben-

flächig mit einer Falz oder Perforationslinie an der Abwinklungsstelle vorzufertigen und in dieser Form an den Einsatzort zu bringen. Der Anwender selbst biegt dann kurz vor einer Verwendung die Falz- oder Perforationsstelle um.

Ersichtlich ist eine vielseitige Verwendung denkbar, beispielsweise als Begrenzung unterirdischer Wurzelausbreitungen oder als Maulwurfs- oder Wühlmaus-Stopp. Bei einer oberen Abwinklung kann die Platte als Oberflächenwasserabweiser oder als Gartenwegplatte dienen, wenn die obere Abwinklung großflächig ausgebildet ist. Bevorzugt findet die Erfindung Anwendung als Einzäunung von Beeten oder Gräber. Wird die Platte nur teilweise ins Erdreich eingeführt, kann sie als Abdichtung beispielsweise zwischen Drahtzaun und Erdoberfläche dienen. Bei einer streifenförmigen Platte mit oberer Bohrung kann diese als Zelthäring Verwendung finden. In anderen Anwendungsfällen kommt die Erfindung für vegetationsfreie Randstreifen (Platten oben rechtwinklig abgelogen) sowie als Wasserabweiser unter der Erdoberfläche oder als Erosionsstopp an Hängen in Frage.

Die Erfindung wird nachfolgend anhand von Ausführungsbeispielen unter Bezugnahme auf die Zeichnung näher erläutert; es zeigt:

- Fig. 1 eine erfindungsgemäße Platte mit durchgehender bodenseitiger Abwinklung in schematischer Darstellung,
- Fig. 2 eine Platte mit einer Abwinklung, die sich nicht über die gesamte Plattenbreite erstreckt,
- Fig. 3 eine Platte ähnlich der Fig. 2, wobei der bodenseitige Randbereich gewölbt und der Stechkante eines herkömmlichen Spatens angepaßt ist,

- Fig. 4 eine gemäß Fig. 1 ausgebildete an einen Spaten angelegte Platte während eines Einziehens in das Erdreich,
- Fig. 5 eine eingezogene Platte in schematischer Darstellung,
- Fig. 6 eine der Fig. 5 ähnliche schematische Ansicht einer eingezogenen Platte in S-Form,
- Fig. 7 und 8 weitere Ausführungsformen einer erfindungsge-
mäßen Platte,
- Fig. 9 eine Ausführungsform einer Doppelplatte mit innerer
Spatentasche,
- Fig. 10 und 11 Platten-Ausführungen mit oberen Haken bzw.
Befestigungsösen, und
- Fig. 12 und 13 Platten mit oberem Zierrand.

Die in Fig. 1 gezeigte Ausführungsform einer Platte 1 ist ebenflächig folienartig ausgebildet und weist eine untere geradlinige Falz 5 auf. In planer Form wird sie an den Einsatzort gebracht. Vor einer Anwendung knickt der Anwender den unteren Seitenrand 2 der Platte 1 um, um eine spitzwinklige Abwinklung 4 für einen Eingriff eines Spatens 9 zu schaffen. Gemäß Fig. 4 wird dann die Platte in das Erdreich eingezogen, bis sie in der gewünschten Tiefe angeordnet ist. Anschließend wird der Spaten 9 zurückgezogen und hinterläßt im Erdreich eine Platte 1, wie dies beispielsweise in Fig. 5 gezeigt ist. Die spitze Abwinklung 4 verhindert ein Herausziehen der Platte zusammen mit dem Spaten. Die auch als Widerhaken dienende Abwinklung 4 ist jedoch nicht so steif, daß ein Zurückziehen einer Platte 1 bei einer Fehlsetzung gänzlich ausgeschlossen ist. Bei einer stärkeren Rückziehkraft biegt sich diese wieder zurück.

Damit ist zum einen ein schnelles und leichtes Einsetzen einer Platte in das Erdreich sowie ein ausreichender Halt der Platte im Erdreich möglich, zum anderen aber trotz ausreichendem Halt in der Normallage auch ein Herausziehen und ein Neuversetzen.

Die in Fig. 2 gezeigte Ausführungsform einer Platte 1 gleicht grundsätzlich derjenigen nach Fig. 1, es ist jedoch keine durchgehende Abwinklung 4 vorgesehen, sondern es weist der untere Seitenrand 2 Haken 3 auf, die spitzwinklig zur Basisebene der Platte 1 verlaufen und in einen Eingriff mit einem Spaten gebracht werden können.

Die in Fig. 3 veranschaulichte Ausführungsform entspricht derjenigen nach Fig. 2 und weist eine gebogene untere Kante auf, die der Stechkante eines Spatens angepaßt ist.

In den Fig. 6 bis 8 sind Ausführungsbeispiele gezeigt, die neben der bodenseitigen Abwinklung 4 einen oberen Randbereich 6 aufweisen, so daß die Platte S-förmig abgewinkelt ist. Die Abwinklung kann hierbei plattig sein und zur Basisebene der Platte 1 einen spitzen (bzw. rechten) Winkel gemäß Fig. 6 (bzw. gemäß Fig. 7) bilden, aber auch bogenförmig sein, wie dies beispielsweise in Fig. 8 gezeigt ist. Die Ausführungsbeispiele nach den Fig. 6 und 8 ermöglichen bei entsprechend tiefem Eindringen der Platte in das Erdreich eine Vorspannung (Gegenspannung), wobei die vorderste Kante des oberen Randbereichs 6 in einem Eingriff mit dem Erdreich steht und dadurch nicht nur ein sicherer verspannter Halt einer Platte im Erdreich möglich ist, sondern auch eine gute Abdichtung im Bereich der vordersten Kante. Das Ausführungsbeispiel nach Fig. 7 wird vorzugsweise ganz in das Erdreich eingezogen, bis der obere rechtwinklige Randbereich 6 auf dem Erdreich liegt. Eine Platte dieser Art dient vornehmlich der Ausbildung vegetationsfreier Randstreifen beispielsweise einer Wiese, eines Beetes oder eines Grabes. Die Platte

kann aber auch als Gartenwegplatte Verwendung finden, sofern der obere Randbereich 6 großflächig ausgebildet ist.

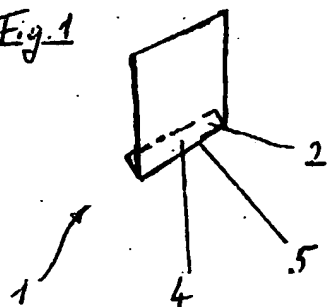
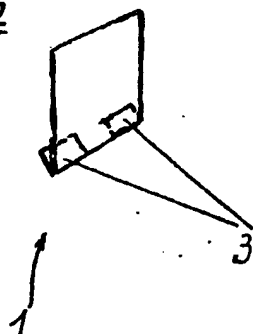
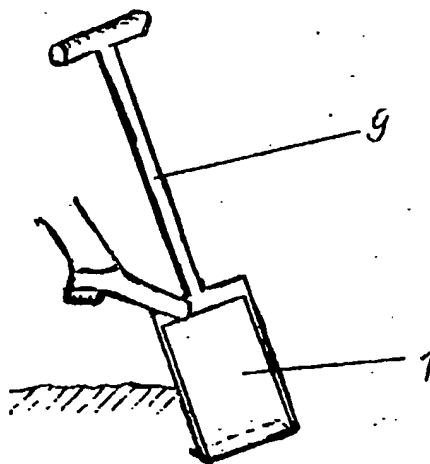
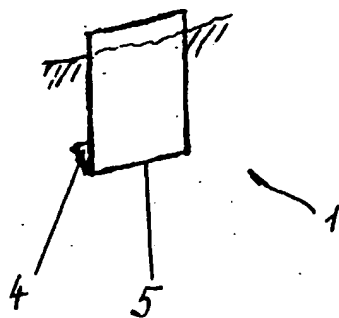
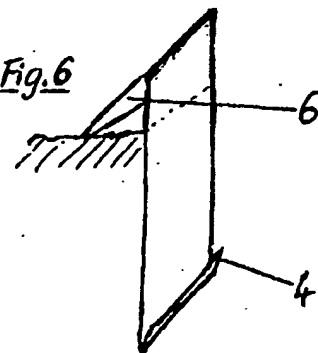
Die in Fig. 9 gezeigte Ausführungsform entspricht im grundsätzlichen Aufbau der Platte nach Fig. 7 in doppelter Anordnung. Die Doppelplatte ist einstückig und symmetrisch ausgebildet und weist eine innere Spatentasche 7 auf, in die eine Spatenschaufel einführbar ist. Derartige Platten dienen in ihrer Gesamtanordnung der Ausbildung eines breiteren vegetationsfreien Randstreifens. Die Spatentasche 7 kann bei einer überlappenden Anordnung mehrerer Platten auch als Abflußrinne oder Drainagekanal Verwendung finden.

Die in Fig. 10 gezeigte Ausführungsform weist einen oberen Randbereich 6 auf, der in Form von Befestigungshaken 10 ausgebildet ist. Die Haken können beispielsweise als Verankerung von Befestigungsschnüren für Zelte oder Kunststoffabdeckplanen dienen.

Das Ausführungsbeispiel nach Fig. 11 sieht als Befestigungsmittel Befestigungsösen 11 im oberen Randbereich der Platte vor, durch die eine Schnur eingefädelt werden kann, während die Ausführungsbeispiele nach den Fig. 12 und 13 einen oberen Zierrand besitzen.

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Anmeldetag: 23. Oktober 1980
Offenlegungstag: 27. Mai 1982

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Fig. 1Fig. 2Fig. 3Fig. 4Fig. 5Fig. 6

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Fig. 7

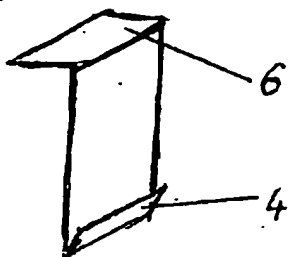


Fig. 8



Fig. 9

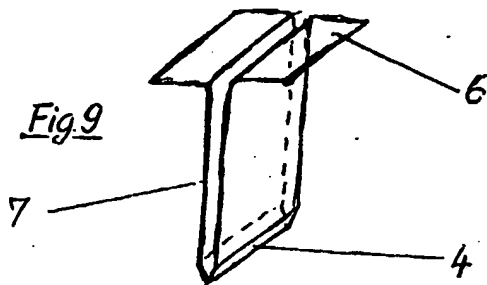


Fig. 10

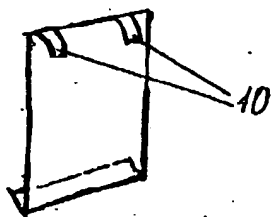


Fig. 11

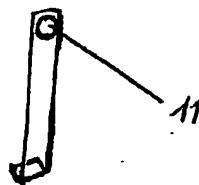


Fig. 12

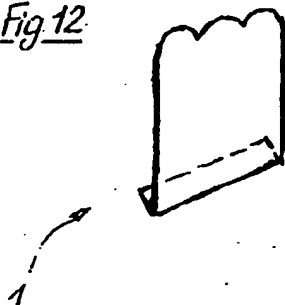
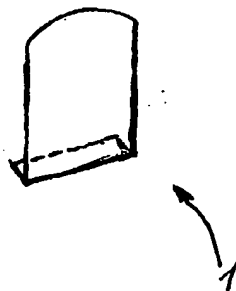


Fig. 13



DERWENT-ACC-NO: 1982-G3619E

DERWENT-WEEK: 198222

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TITLE: Upright garden border panel - has bent or hooked side
edge for engagement by spade

INVENTOR: GRUBER, B

PATENT-ASSIGNEE: GRUBER B[GRUBI]

PRIORITY-DATA: 1980DE-3039971 (October 23, 1980)

PATENT-FAMILY:

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ABSTRACTED-PUB-NO: DE 3039971A

BASIC-ABSTRACT:

A panel for laying on the ground is esp. suitable for use in gardens, for forming a boundary round flower beds or for similar purposes. It is virtually flat, with a lateral edge fitted with pointed hooks or a pointed bent section, for bringing into contact with the sharp edge of a spade.

There may be a rebate at the bottom of the hooks or bent section. It can be made of rigid or elastic plastics, or metal, which may have a plastic coating. It can have stiffening ribs. The other edge may be bent in a curve, to

provide
a roughly S-shaped cross-section.

TITLE-TERMS: UPRIGHT GARDEN BORDER PANEL BEND HOOK SIDE
EDGE ENGAGE SPADE

DERWENT-CLASS: P13 Q41

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